Sandgate BO 1441(30)
Bridge 27 on TH 9 (Lincoln Lane) over Terry Brook
Alternatives Presentation Meeting

Presented by
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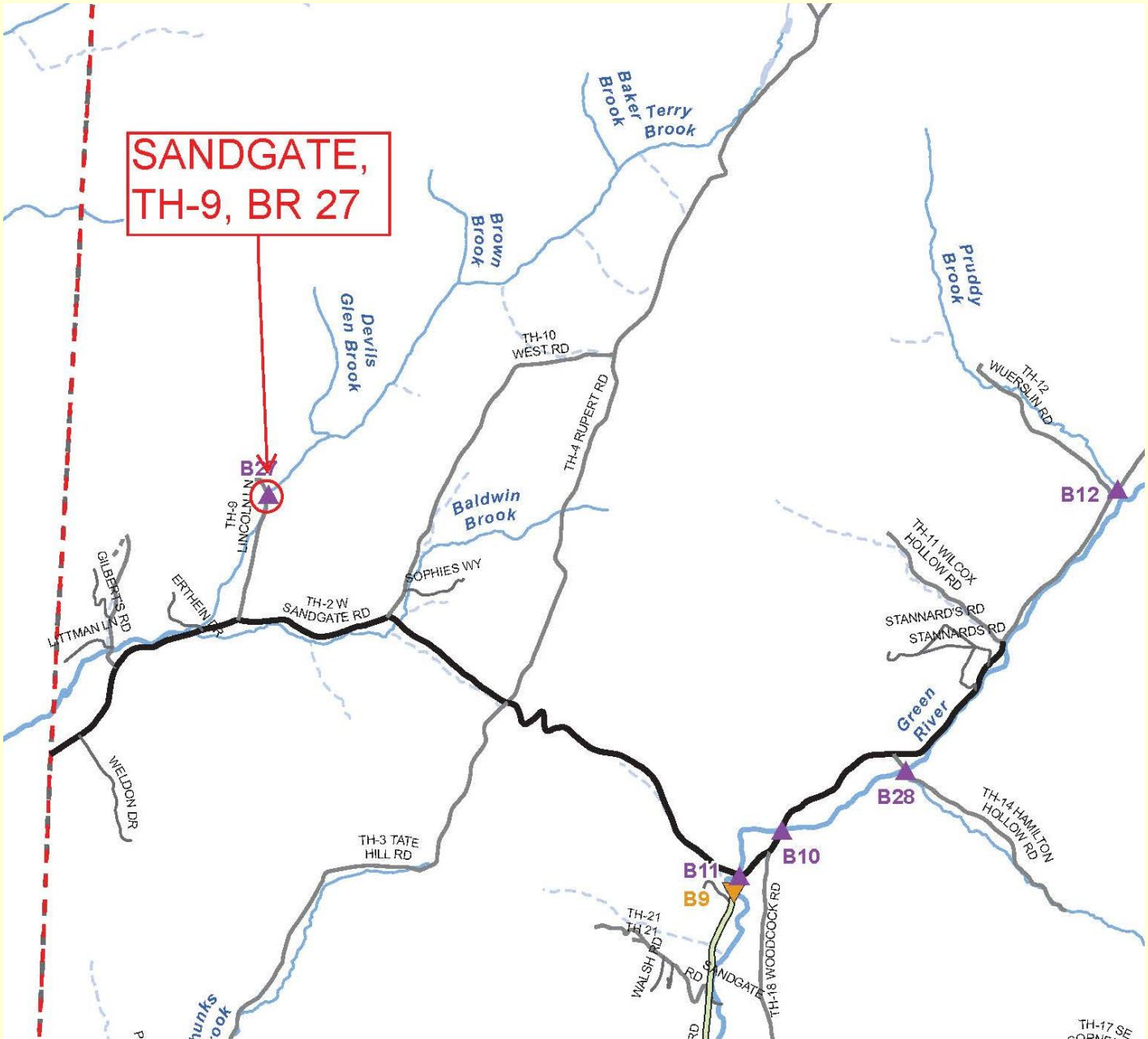
PROJECT LOCATION



Meeting Outline

- Purpose of the Meeting
- Accelerated Bridge Program
- Existing bridge deficiencies
- Alternatives considered
- Summary and recommendation
- Next Steps

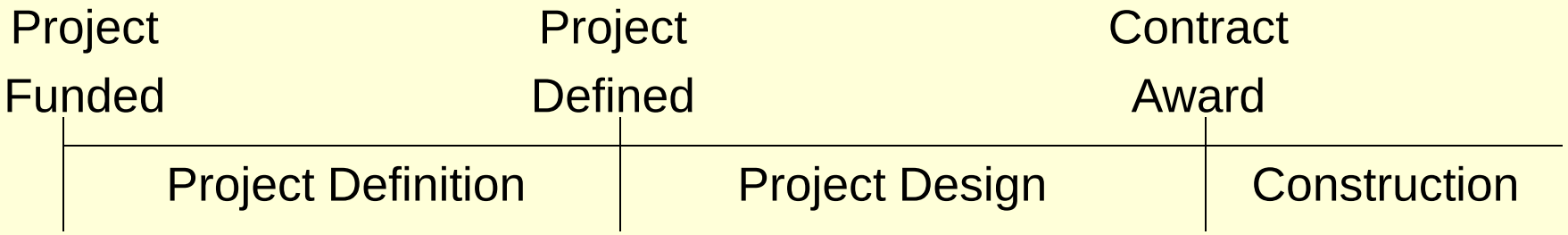
Purpose of Meeting

- Present the alternatives that we have considered
- Explain the constraints to the project
- Provide you with the chance to ask questions & voice concerns
- Build consensus for the recommended alternative-

Accelerated Bridge Program

- Began in January 2012
- Bridges are deteriorating faster than we can fix them
- Short-term closures are key
- Impacts to property owners and resources is minimized
- Less impacts = less process = less money = faster delivery
- Accelerated Bridge Construction (ABC) is very efficient
- Accelerated Project Delivery is the result
- Shift from individual projects to programmatic approach
- Goal of 25% of projects into Accelerated Bridge Program
- Goal of 2 year design phase for ABP (5 years conventional)

Phases of Development



Identify resources & constraints

Evaluate alternatives

Public Participation

Build Consensus

- Quantify areas of impact
- Environmental permits
- Develop plans, estimate and specifications

Project Background

- The structure is owned and maintained by the Town
- Lincoln Lane is a class 3 local road
- Funding will be 80% Federal
- State/Local shares will be determined based on alternative selected
- Functionally labeled as a Rural local road
- Posted Speed = 35 mph (Design Speed)
- Existing bridge is a single-span with steel beams and timber deck
- Bridge length = 24 feet
- Bridge Width = 14 feet +/-
- The bridge was built in 1960 (54 years old)

Traffic Data

	“Current Year” 2016	“Design Year” 2036
Average Annual Daily Traffic	**15**	**15**
Design Hourly Volume	**10**	**10**
Average Daily Truck Traffic	**2**	**3**
%Trucks	**1.1**	**1.4**

Recent Repairs to bridge

- In response to letters from the VAOT Bridge Inspection section, the Town made repairs to the existing bridge due to the deteriorated condition
- The work performed consisted of repairs to both abutments, the addition of steel beams and a new hemlock deck
- The work was performed in the spring of 2013
- Much of the report was written prior to being notified that the repairs had been made
- The repairs are considered to be temporary fixes to allow the bridge to remain open
- Prior to funding, a letter was sent to the Town asking for input on whether the project should be funded for scoping. Town response indicated that the project should be funded

EXISTING BRIDGE DEFICIENCIES

Inspection Rating Information (Based on a scale of 9)

	Pre-Repair	Post-Repair
Bridge Deck Rating	3 Serious	8 Very Good
Superstructure Rating	3 Serious	5 Fair
Substructure Rating	4 Poor	6 Satisfactory

Rating Definitions

9 Excellent
8 Very Good
7 Good
6 Satisfactory
5 Fair
4 Poor
3 Serious
2 Critical
1 Imminent Failure

Deficiencies

- The repairs to the bridge are considered temporary and may not last long
- The bridge is too narrow for the roadway classification and design speed
- The bridge railing is substandard
- The vertical and horizontal alignments are substandard
- The bridge does not meet the hydraulic standards

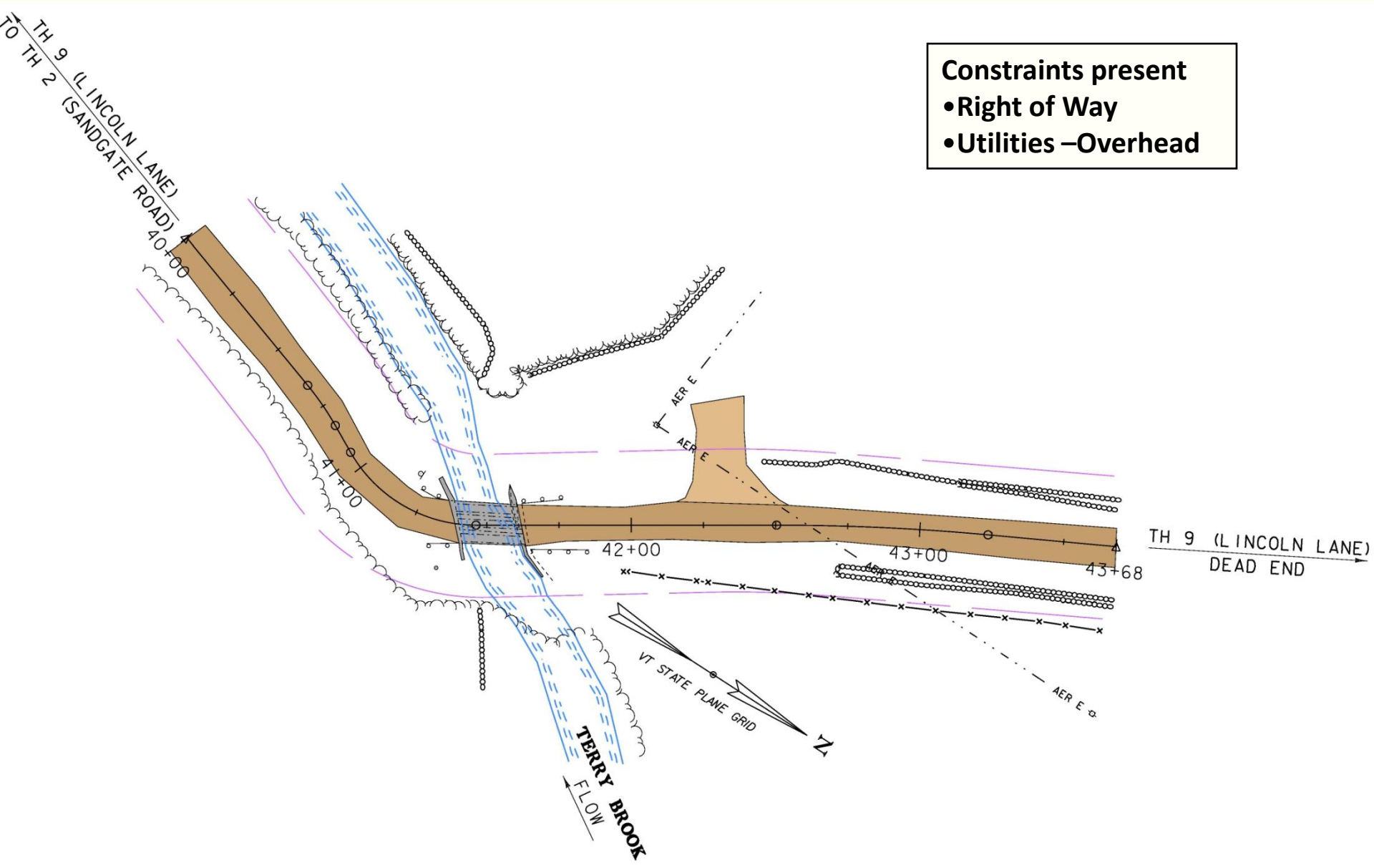
Looking north over Bridge

Looking south over bridge

North Abutment

South Abutment

Layout Showing Constraints



Alternatives Overview

Alt 1 - Superstructure Replacement

Alt 2 - Replacement – Frame

a. Bridge Closure
b. Temporary Bridge

Alt 3 - Replacement – Integral Abutment

a. Bridge Closure
b. Temporary Bridge

Alt 4 – Replacement on new alignment

Traffic Maintenance Options

Bridge Closure

- Close bridge (time dependent on alternative selected)
- Allow 24/7 construction during bridge closure
- Contract incentives/dis-incentives to encourage contractor
- Contractor will receive more $ if closure is less than stated in the contract
- Community would have input on time of closure (between June 1 and September 1)
- Town will be responsible for details associated w/ closure
- Local share will be cut in half

Traffic Maintenance Options

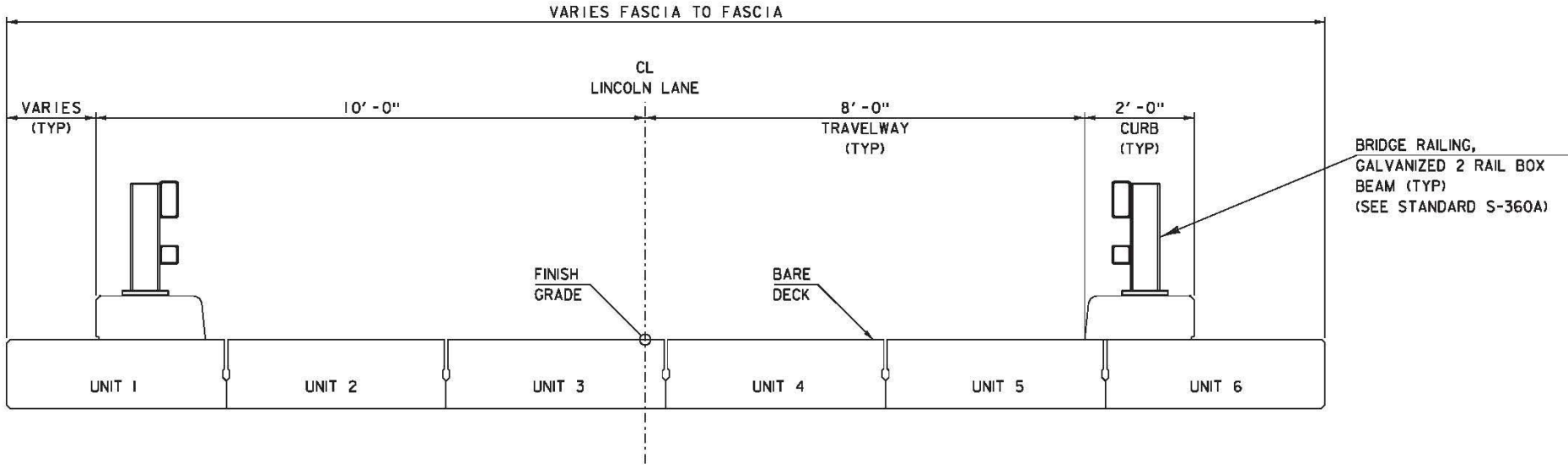
Temporary Bridge

- Construct temporary bridge to maintain traffic
- One-Way alternating traffic (without lights)
- Very long construction duration
- Right-Of-Way acquisition is necessary
- Environmental impacts are increased
- Property owner impacts are increased
- Project Delivery time increased
- Project Costs increased-

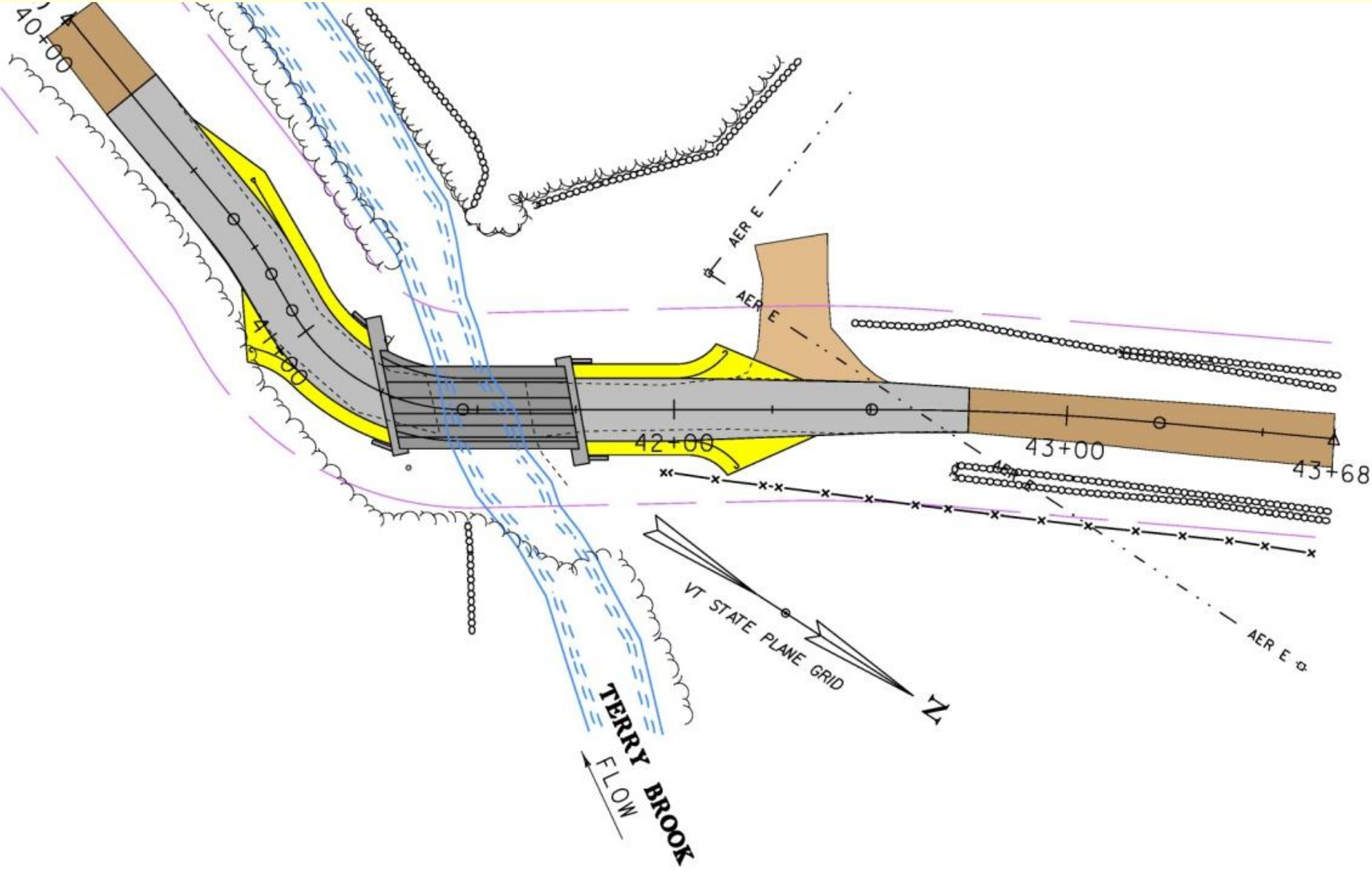
Alternative 1 - Details

- Lowest cost solution
- Replace superstructure w/ 16’ wide rail to rail distance
- Existing abutments would remain for soil retention
- Span would be increased w/ bridge supported on slabs behind existing abutments
- Horizontal alignment would remain unchanged
- Vertical alignment would be improved slightly
- Bridge would remain hydraulically substandard
- Could be completed w/ 3 day closure
- Short term (30 year) solution

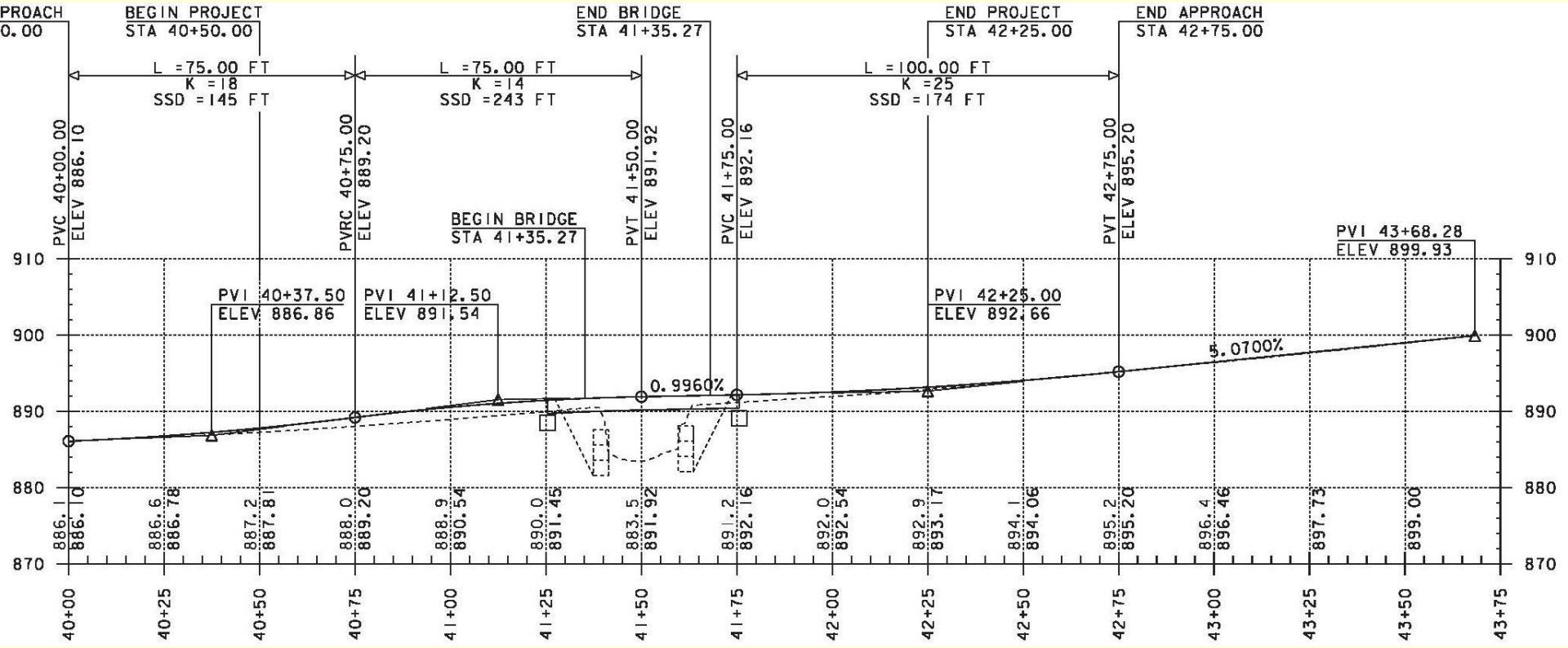
Typical Section – Alternative 1



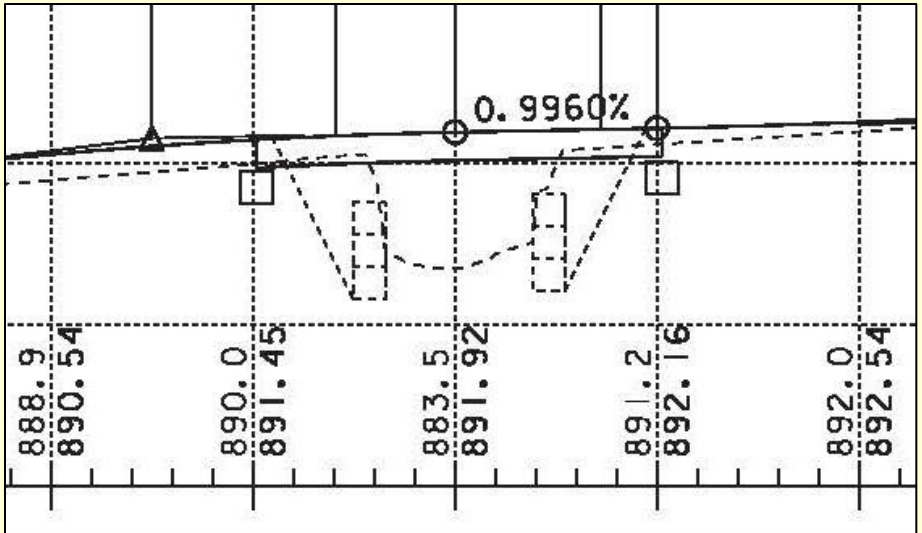
Layout – Alternative 1



Profile – Alternative 1



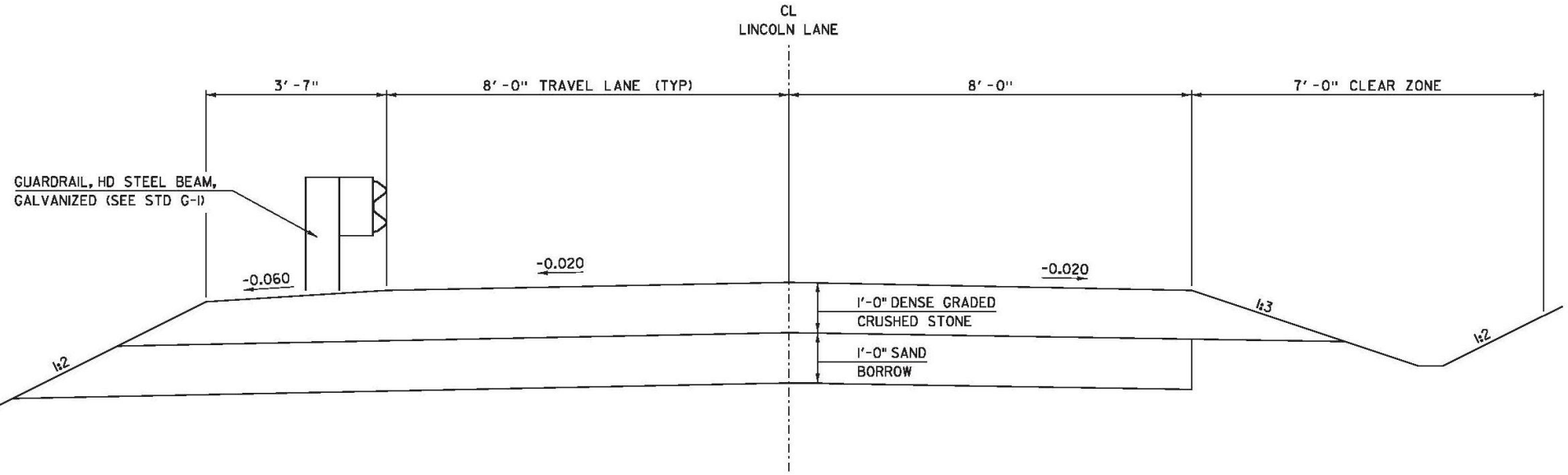
Enlarged View of Bridge



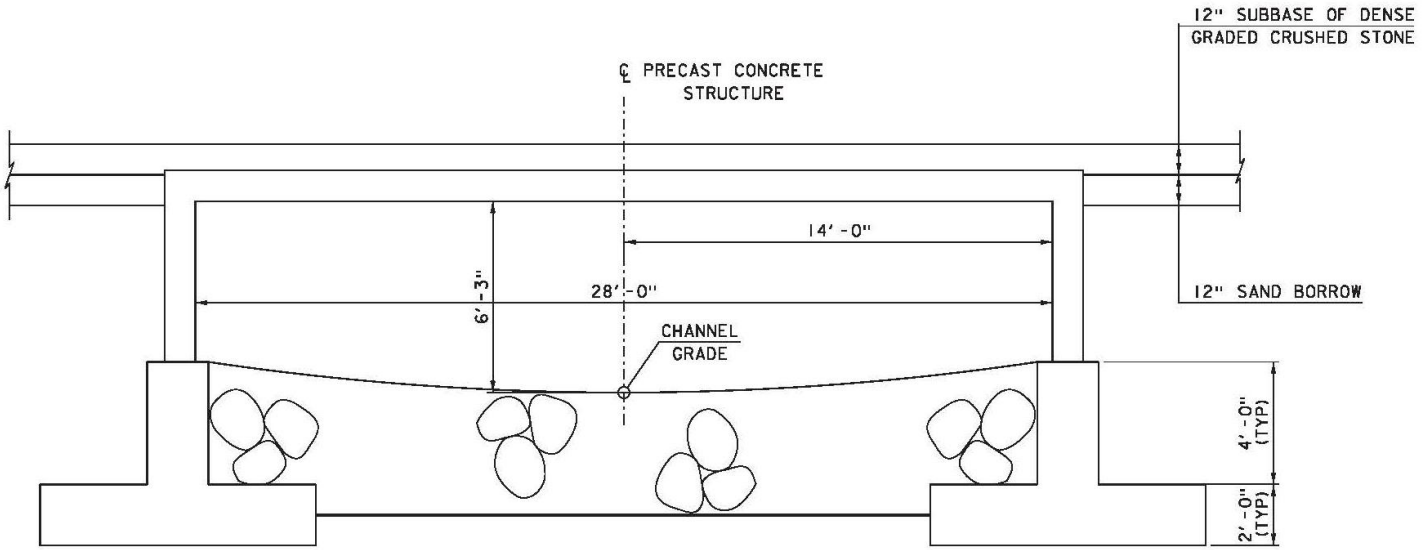
Alternative 2 - Details

- Complete replacement w/ 16’ wide rail to rail distance
- Concrete Frame bridge with 28’ clear span
- Horizontal alignment would remain unchanged
- Vertical alignment would be improved
- Bridge would meet hydraulic standards
- Traffic Maintenance Options
  - 3 week bridge closure (5% local share)
  - One-way temporary bridge (10% local share)
- Long-term (80 year) solution

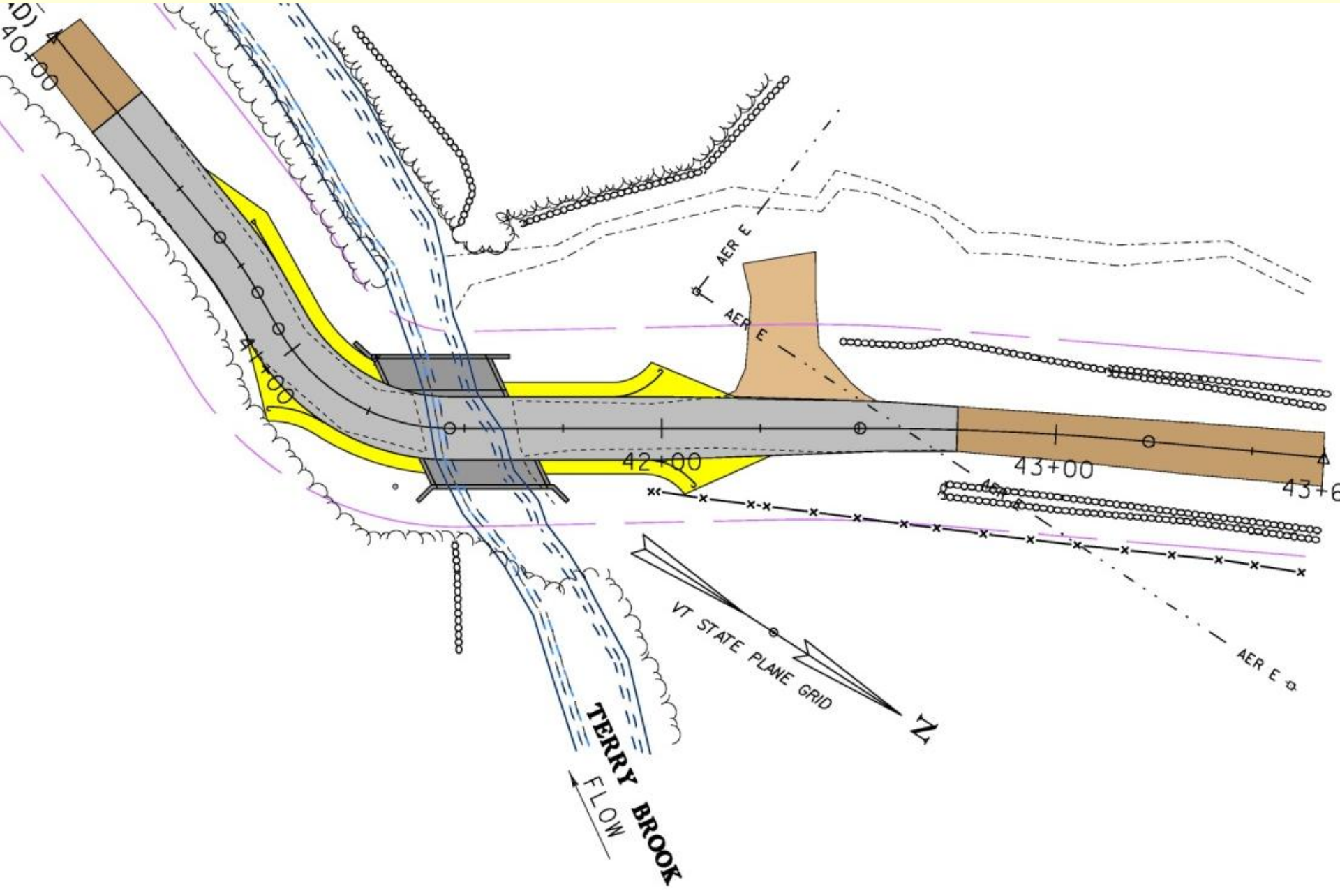
Typical Section – Alternative 2



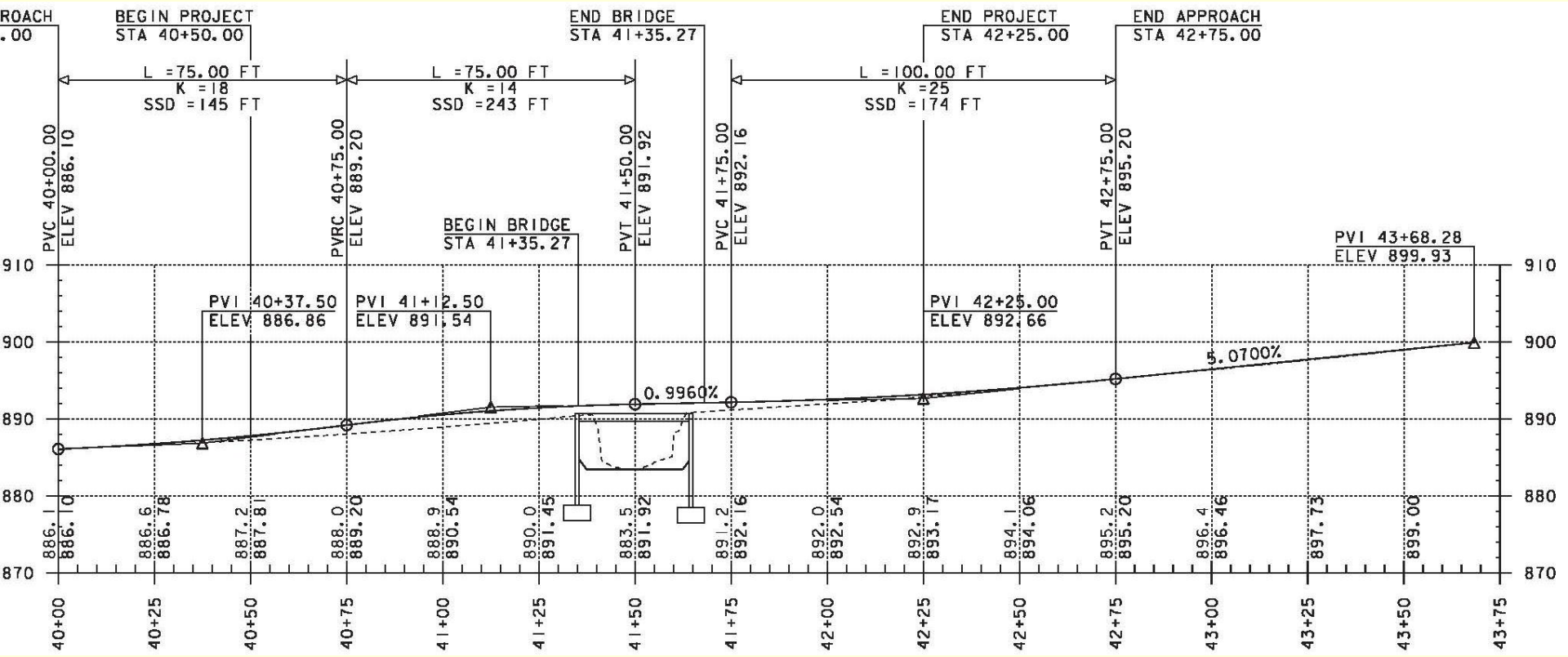
TH 9 ROADWAY TYPICAL SECTION
SCALE 3/4" = 1'-0"



Layout – Alternative 2



Profile – Alternative 2



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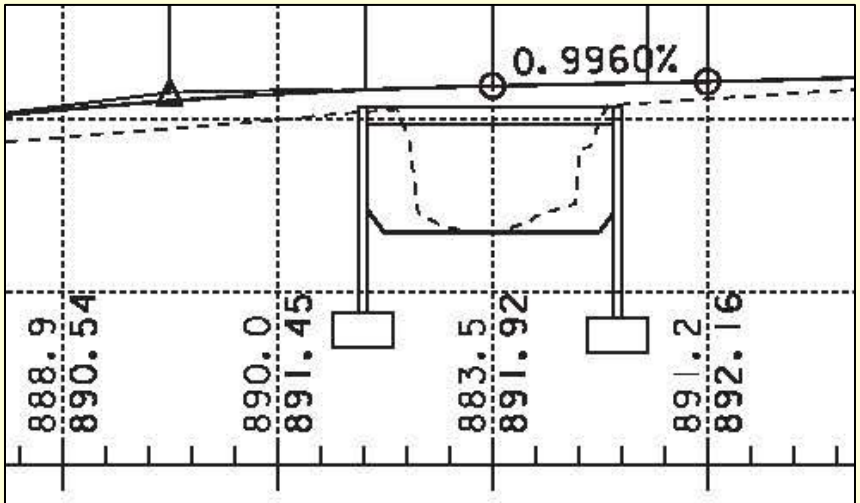
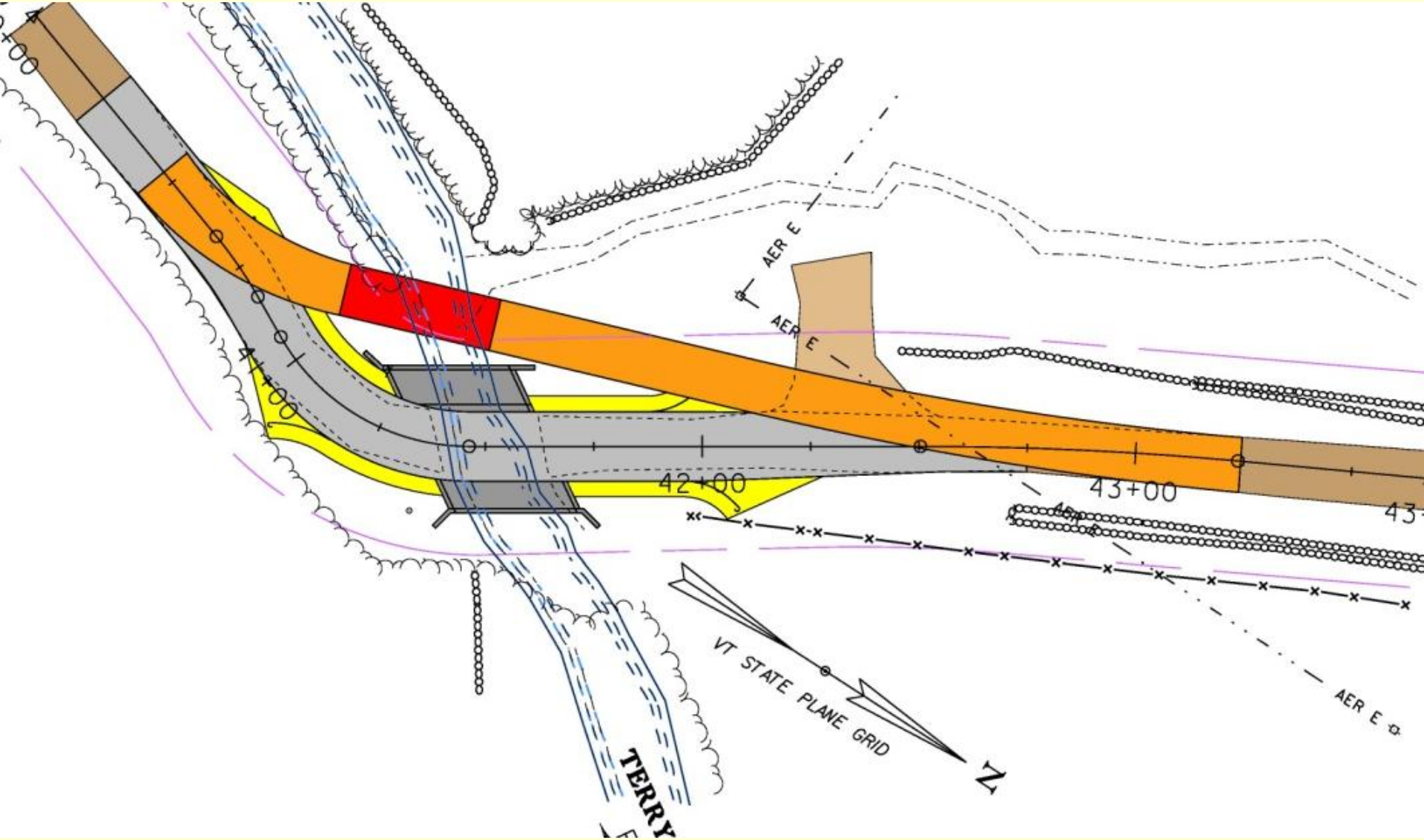


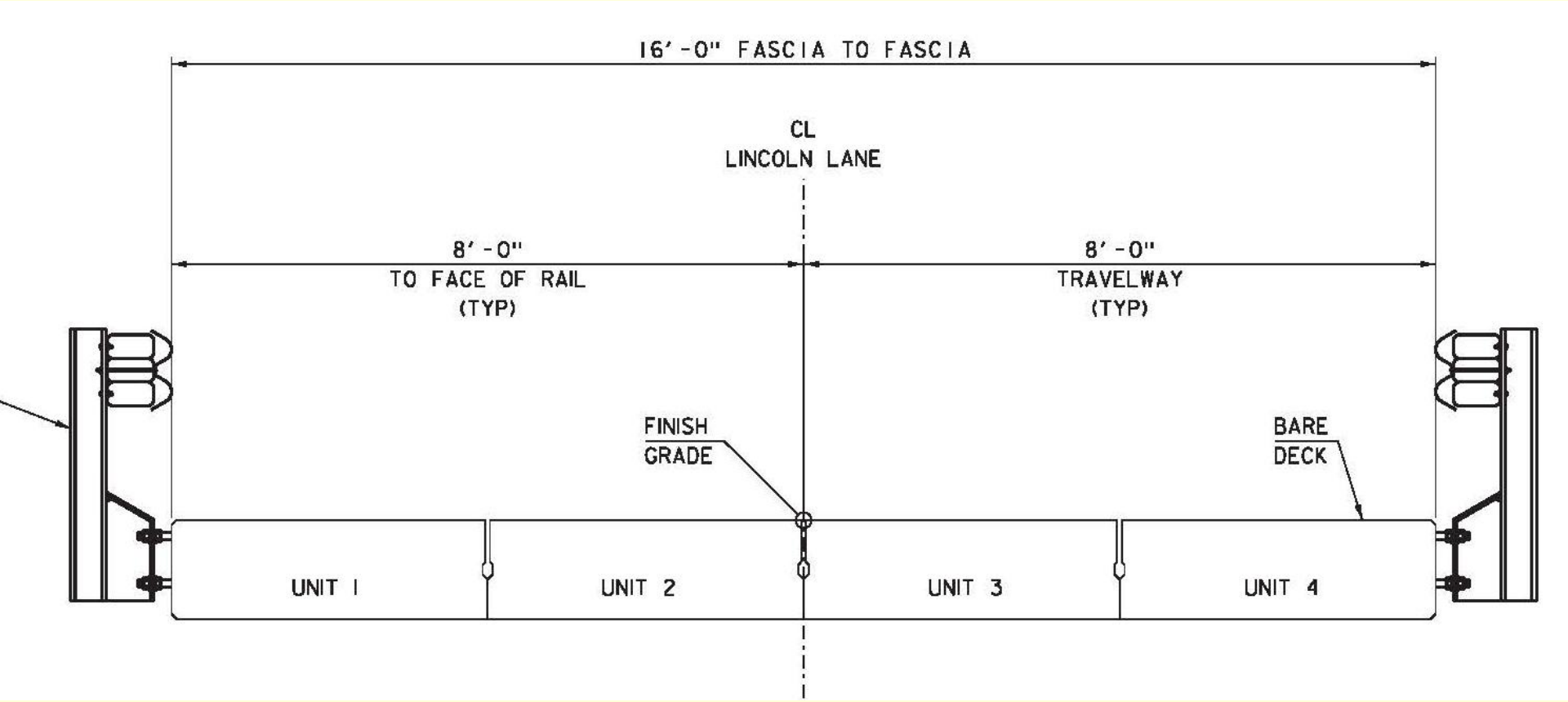
Layout – Alternate 2 w/ Temporary Bridge



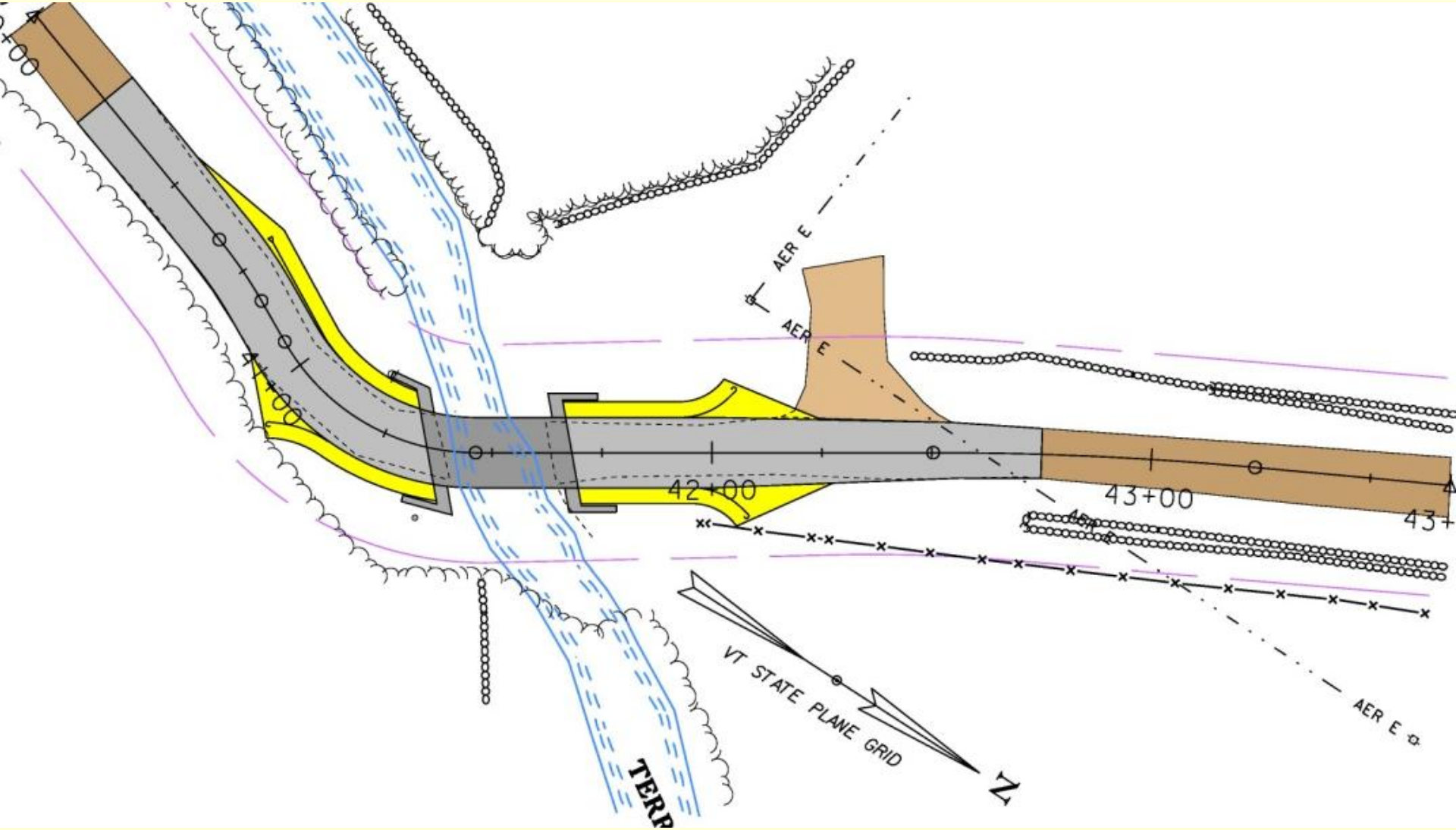
Alternative 3 - Details

- Complete replacement w/ 16’ wide rail to rail distance
- Precast, pre-stressed concrete slab with 30’ span
- Integral abutment foundation
- Horizontal alignment would remain unchanged
- Vertical alignment would remain close to existing
- Bridge would meet hydraulic standards
- Traffic Maintenance Options
  - 4 week bridge closure (5% local share)
  - One-way temporary bridge (10% local share)
- Long-term (80 year) solution

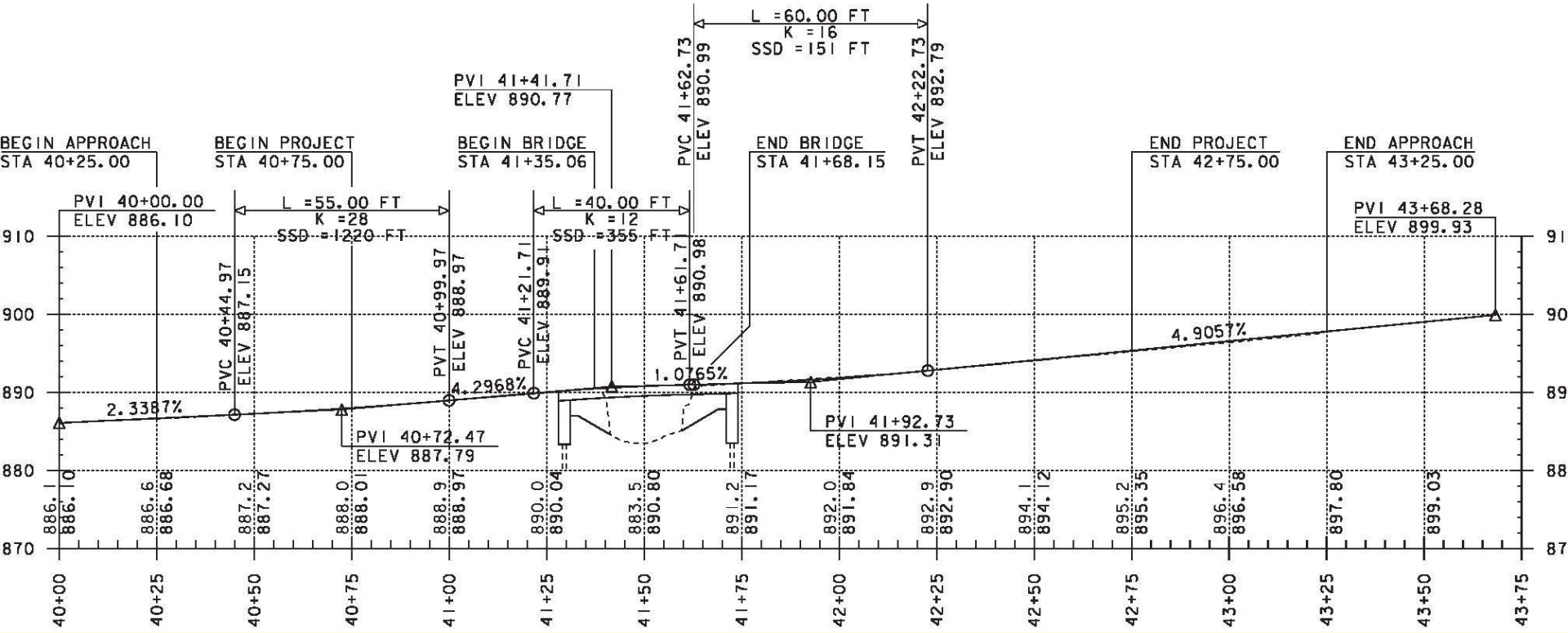
Typical Section – Alternative 3



Layout – Alternative 3



Profile – Alternative 3



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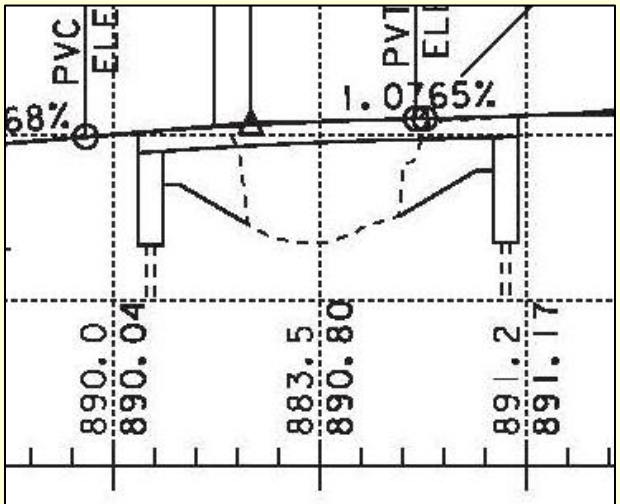
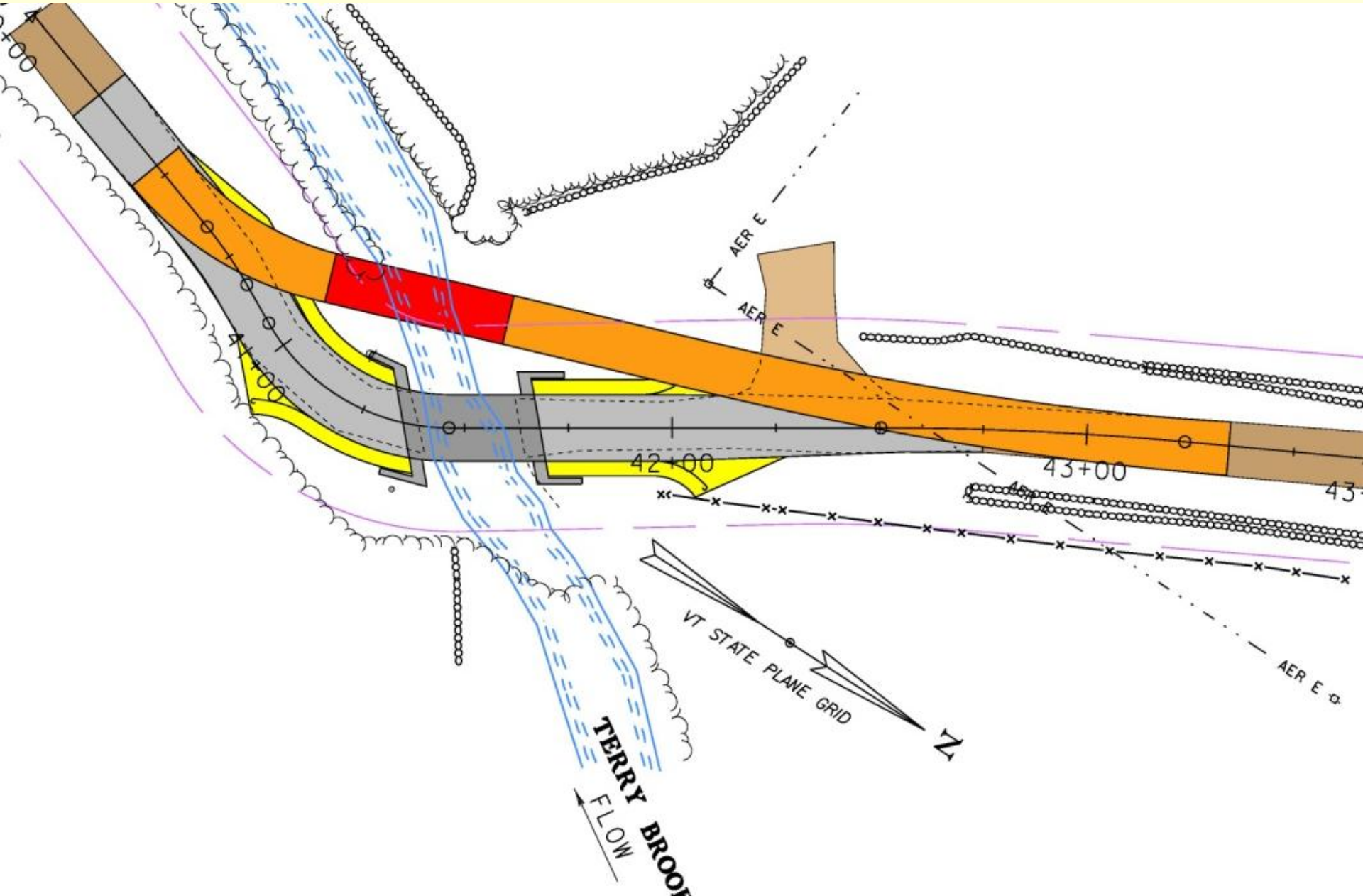


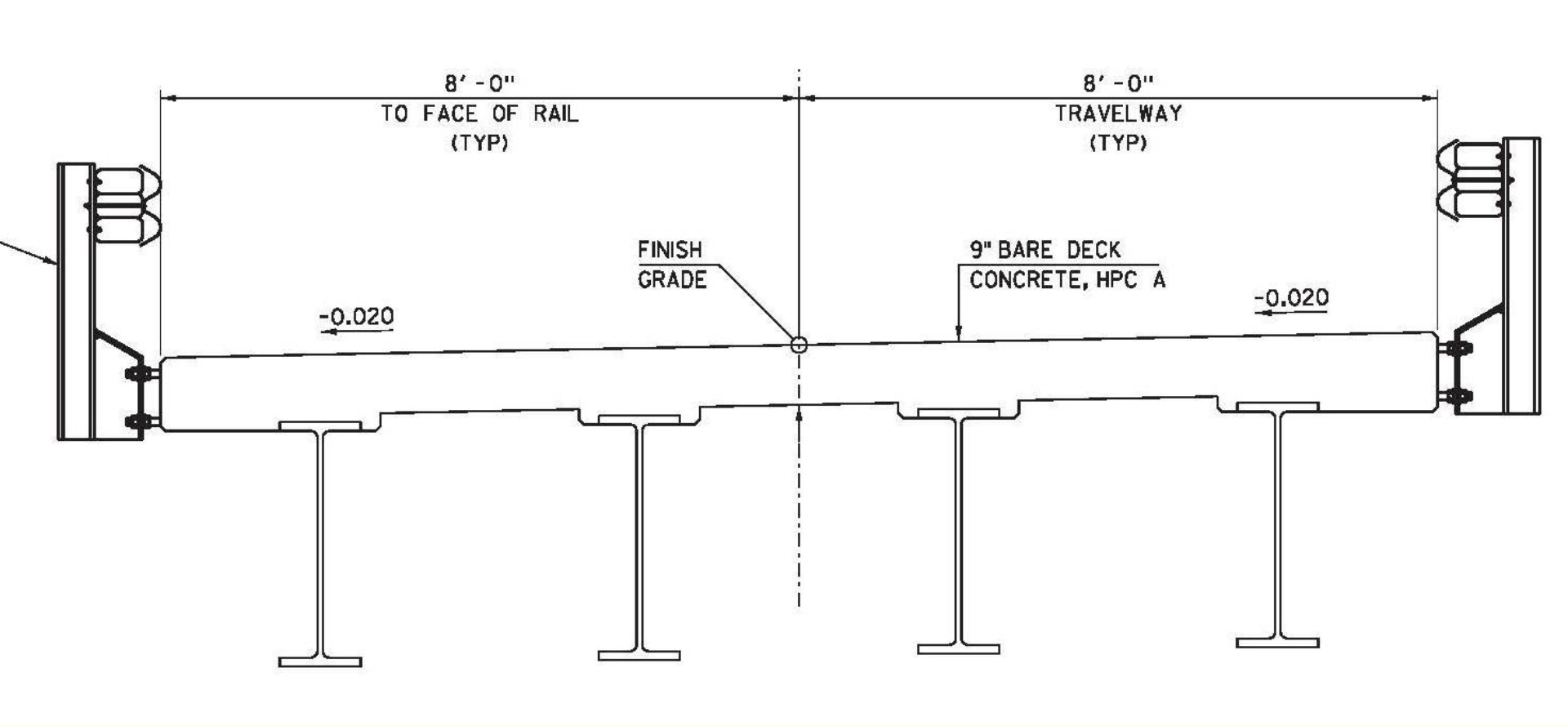
Layout – Alternate 3 w/ Temporary Bridge



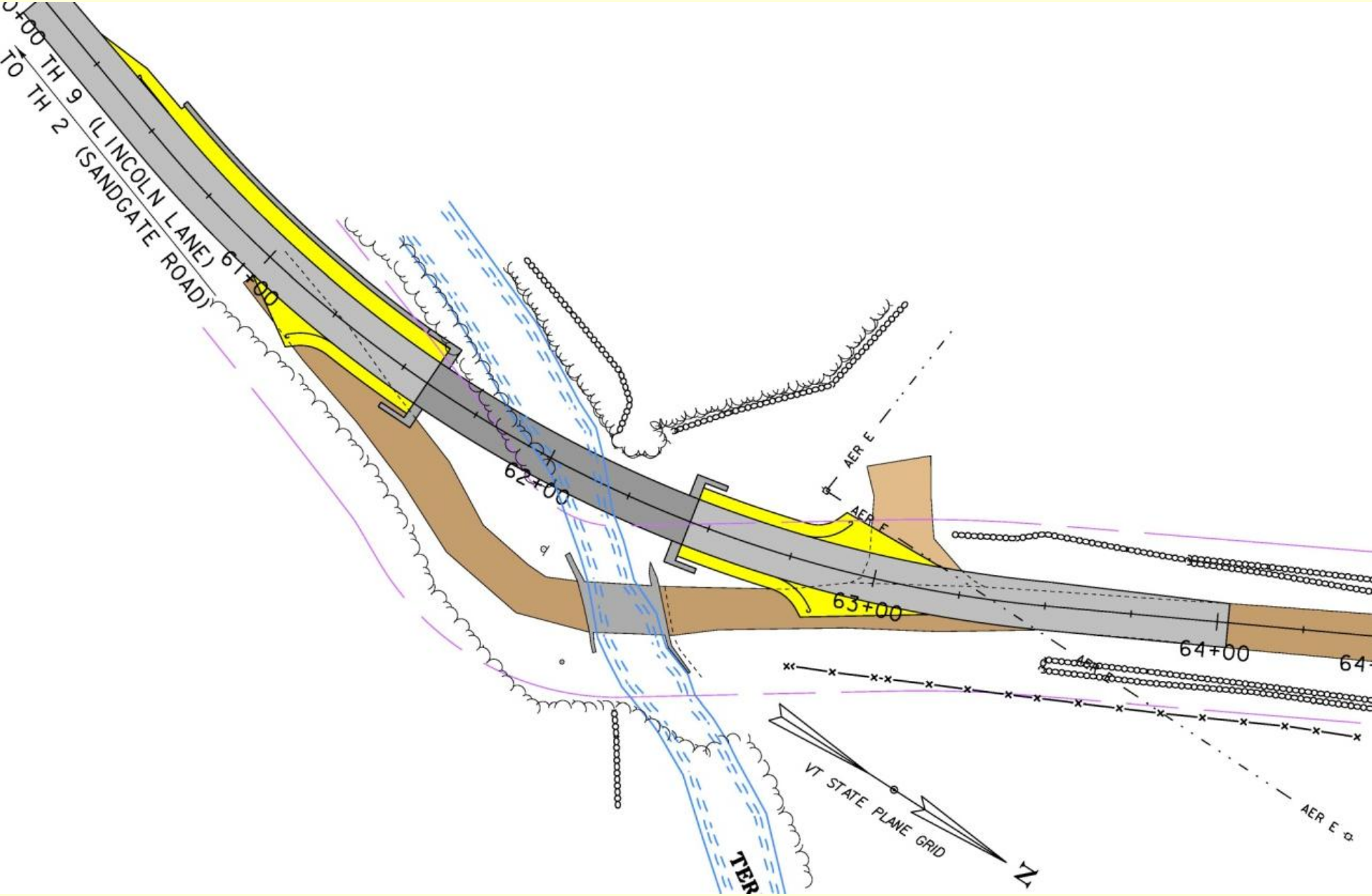
Alternative 4 - Details

- Highest cost option
- Build bridge on new alignment downstream from existing
- Complete replacement w/ 16’ wide rail to rail distance
- Precast Bridge Units (PBUs) or NEXT Beams with 80’ span
- Integral abutment foundation
- Horizontal alignment would be improved and meet standards
- Vertical alignment would be improved and meet standards
- Bridge would meet hydraulic standards
- Traffic Maintenance Options
  - Maintain traffic on existing bridge (10% local share)
- Long-term (80 year) solution

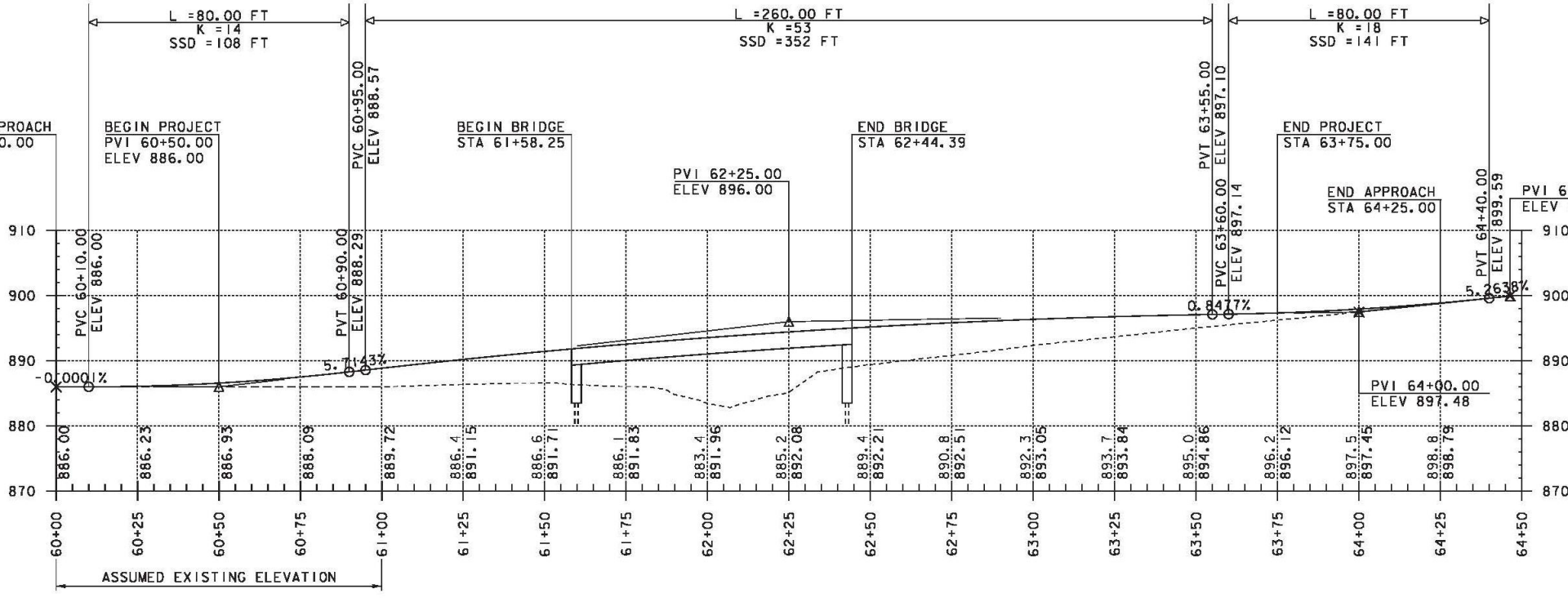
Typical Section – Alternative 4



Layout – Alternative 4



Profile – Alternative 4



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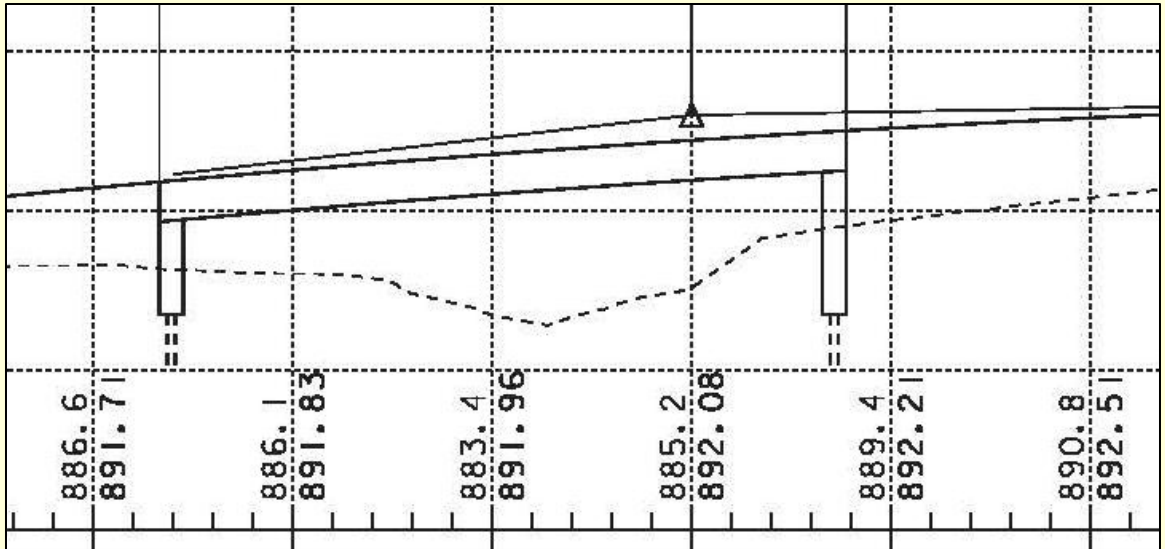


Alternatives Matrix

	Super Replacement Closure	Frame w/ Closure	Frame w/ Temp Bridge	Integral Abut w/ Closure	Integral Abut w/ Temp Bridge	New Alignment
Construction w/ CE and Contingencies	$386,360	$629,200	$700,700	$858,260	$929,669	$1,438,970
Preliminary Engineering	$104,020	$169,400	$188,650	$198,060	$214,539	$276,725
Right of Way	$0	$0	$50,000	$0	$50,000	$50,000
Total Cost	**$490,380**	**$798,600**	**$939,350**	**$1,056,320**	**$1,194,208**	**$1,765,700**
Local Share	**$12,260 (2.5%)**	**$39,930 (5%)**	**$93,935 (10%)**	**$52,820 (5%)**	**$119,420 (10%)**	**$176,570 (10%)**
Design Life (years)	30	80	80	80	80	80
Typical	0-8-8-0	0-8-8-0	0-8-8-0	0-8-8-0	0-8-8-0	0-8-8-0
Project Development Duration	2 years	2 years	4 years	2 years	4 years	4 years
Construction Duration	3 months	6 months	18 months	6 months	18 months	9 months
Closure Duration	3 days	3 weeks	None	4 weeks	None	None

Conclusion and Recommendation

Alternative Selection

Complete Replacement w/ Concrete Frame

- Annualized cost is least of options considered
- Lower future maintenance costs
- Structural deficiencies are addressed
- Most design standards are met (except horizontal alignment
- Long term (80 year) fix

Traffic Maintenance Method

One-way Temporary Bridge

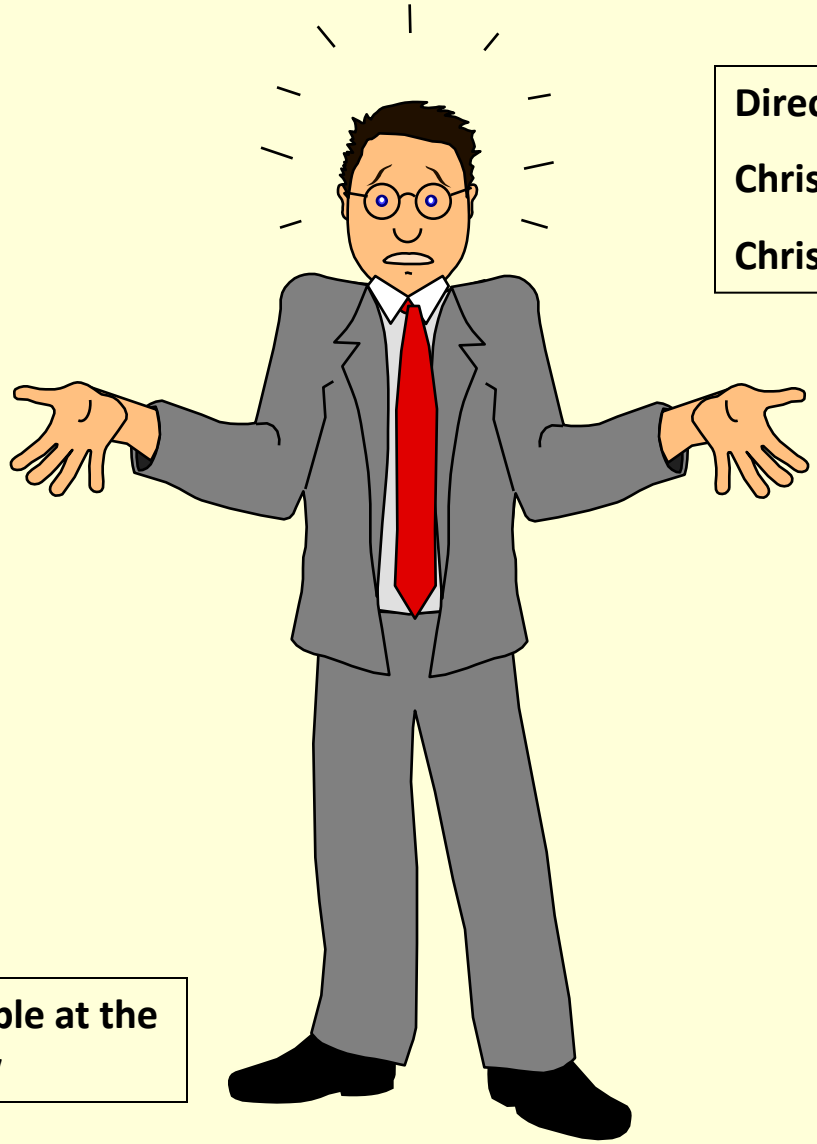
- Dead end road makes closures difficult
- 3 week duration of closure would be very inconvenient

Next Steps

This is a list of a few important activities expected in the near future and is not a complete list of activities.

- Wait for Town response to recommendation on proposed project
- Develop Conceptual plans and distribute for comment
- Begin Environmental Permitting process
- Request a Public Information meeting for proposed project
- Process local agreements
- Project Defined – MILESTONE
- Transfer project to Design Project Manager
- Develop Preliminary plans
- Right-of-Way process (if needed)

Questions



Direct any questions to:

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https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/13J086